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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,888	12/15/2003	Rainer Ottersbach	188.478-DIV-3	5688

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EXAMINER

RIDDLE, KYLE M

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/735,888

Applicant(s)

OTTERSBACH ET AL.

Examiner

Kyle M. Riddle

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:
  - Page 1, first full paragraph, entire last sentence should be deleted;
  - Page 2, first full paragraph, line 7, "while" should read --whereas--;
  - Page 2 of the Preliminary Amendment, line 2 of the paragraph, "No. which" should read --No. 6,701,877 which--.

Appropriate correction is required.

### *Claim Objections*

2. Claims are objected to because of the following informalities:
  - Claim 10, page 4 of the Preliminary Amendment, line 11, "and B and a high" should read --and B have a high--;
  - Claim 10, page 4 of the Preliminary Amendment, line 16, "b" should read --B--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi (U.S. Patent 5,669,343) in view of Seamone (U.S. Patent 4,155,535).

Adachi discloses a valve timing control system comprising:

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- a valve timing varying system 100 and a control valve 10 (column 4, lines 1-3);
- the valve timing varying system 100 having a meshing engagement of splines and cylindrical sections to adjust the angular rotation of the camshaft to the crankshaft (column 4, lines 53-67);
- the control valve 10 connected to the valve timing varying system 100 through passages 1a and 1d for advancing or retarding the relative rotation angle (column 5, lines 10-15, lines 38-45);
- the control valve 10 having delivery passages 1a and 1d, a pressure feeding passage 29 supplying oil to the control valve 10 via an oil pump 13, two hydraulic pressure releasing or draining passages 15a and 15b for discharging oil to the oil pan 291 (column 5, lines 38-47);
- the control valve 10 having a spool 24 received in housing or sleeve 23 (column 6, line 42);
- in a first adjusted position of the spool 24 where no current is supplied, the hydraulic pressure feeding passage 29 communicates with the hydraulic passage 1a, while the hydraulic draining passage 15a communicates with the hydraulic passage 1d (low resistance), and the lands of the spool 24 prevent communication of the hydraulic pressure feeding passage 29 and hydraulic passage 1d while also preventing communication of hydraulic passage 1a with draining passage 15b (high resistance) (column 8, lines 16-28 and Figure 1);
- in a second adjusted position of the spool 24 where maximum current is supplied, the hydraulic pressure feeding passage 29 communicates with the hydraulic passage 1d, while the hydraulic draining passage 15b communicates with the hydraulic passage 1a (low resistance), and the lands of the spool 24 prevent communication of the hydraulic pressure feeding passage

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29 and hydraulic passage 1a while also preventing communication of hydraulic passage 1d with draining passage 15a (high resistance) (column 8, lines 41-52 and Figure 2);

- in a third adjusted position of the spool 24 where a predetermined current is supplied to balance the spool 24 at an intermediate position, the hydraulic pressure feeding passage 29 is blocked from communicating with the hydraulic passages 1a and 1b, while the hydraulic draining passages 15a, 15b are blocked from communicating with the hydraulic passages 1a, 1d (high resistance) (column 8, lines 16-28 and Figure 1);

- compensating for leakage by varying the lengths of the lands of the spool 24 (column 7, lines 50-64 and Figures 5 and 7).

Adachi fails to disclose compensating for fluid leakage at the delivery passages by modifying the radii of the control edges of the lands.

Seamone teaches a low axial force valve spool changing the spool edge contours (radii) to compensate for pressure flow resulting in a spool edge configuration with low flow reaction forces as well as low spool null leakage (column 6, lines 57-68 with column 7, lines 1-5 and Figures 1, 6a, and 6b). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Seamone in the valve timing varying device of Adachi, since the use thereof would have provided an additional means to compensate for fluid leakage other than varying the lengths of the spool lands.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of 1 patent.

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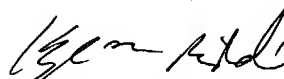
- Wittren et al. (U.S. Patent 3,667,504) disclose a zero-leakage spool valve with chamfered lands and sealing portions to prevent valve leakage.

*Communication*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (703) 306-3409. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kyle M. Riddle  
Examiner  
Art Unit 3748

kmr



THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
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